

Claims

[c1] 1. A system for measuring the amount of force required to operate a convertible top for an automotive vehicle, comprising:
a pulldown actuator for moving a convertible top from an open position into a closed position;
a position transducer, operatively associated with said pulldown actuator, for measuring the travel of said convertible top;
a force transducer, operatively associated with said pulldown actuator, for measuring the force exerted by said pulldown actuator upon said top; and
a controller for recording said measured travel and said force exerted by said pulldown actuator.

[c2] 2. A system according to Claim 1, further comprising a gripper for grasping a portion of said convertible top, with said gripper being attached to said pulldown actuator.

[c3] 3. A system according to Claim 2, wherein said gripper grasps a manual handhold formed in said convertible top.

- [c4] 4. A system according to Claim 1, further comprising a fixture upon which said pulldown actuator and a top may be mounted so as to allow the top to be cycled for the purpose of measuring the travel of the top and the force required to move the top from an open position to a closed position.
- [c5] 5. A system according to Claim 1, further comprising a removable anchor structure for mounting said pulldown actuator within an automobile for the purpose of measuring the travel and closing force of a convertible top installed upon the vehicle.
- [c6] 6. A method for determining the force required to close a convertible top, comprising the steps of: attaching a pulldown actuator to a portion of the top corresponding to a manual gripping location; moving the top from an open position to a closed position by means of the pulldown actuator; and measuring the travel of the top and the corresponding force exerted by the pulldown actuator upon the top as the top is moved to the closed position.
- [c7] 7. A method according to Claim 6, further comprising the step of recording the measured values of top travel and force.

[c8] 8. A method according to Claim 7, further comprising the step of performing a statistical analysis upon the recorded values of top travel and force.

[c9] 9. A system for determining an operating characteristic of a convertible top for an automotive vehicle, comprising:
a gripper for grasping a handhold mounted to a convertible top;
a pulldown actuator for moving a convertible top from an open position into a closed position;
a flexible, inextensible member having a first end attached to said gripper and a second end attached to said pulldown actuator;
a position transducer, operatively associated with said pulldown actuator, for measuring the travel of said convertible top;
a characteristic transducer, operatively associated with said pulldown actuator, for measuring a convertible top operating parameter as the convertible top is moved from one position to another; and
a controller for operating said pulldown actuator and for recording a plurality of corresponding values of said measured travel and said measured operating parameter.

[c10] 10. A system according to Claim 9, further comprising a removable anchor structure for mounting said pulldown

actuator within a vehicle, so as to permit the measurement of top travel and said operating parameter for a top installed upon a vehicle.

- [c11] 11. A system according to Claim 9, wherein said controller further comprises a data storage facility for storing a plurality of corresponding values of travel and said operating parameter for a plurality of convertible tops.
- [c12] 12. A system according to Claim 9, further comprising a fixture upon which said pulldown actuator and a top may be mounted so as to allow the top to be cycled for the purpose of measuring the both the travel of the top and said operating parameter associated with movement of the top from a first position to a second position.
- [c13] 13. A system according to Claim 9, wherein said operating parameter comprises the operating effort required to move the convertible top from an open position to a closed position.
- [c14] 14. A system according to Claim 9, wherein said operating parameter comprises the audible noise associated with movement of the convertible top from an open position to a closed position.